

Message from Rafael W. Rodriguez, Director, New York Water Science Center

As we approach the halfway mark of fiscal year 2007, Congress passed a stop-gap budget bill that funded most Federal agencies including the USGS at last year's levels. Because of some other accounting changes in Washington D.C., this actually results in a slight reduction in the matching funds that USGS can contribute to projects and data collection. This budget also eliminates earmarks, which creates some question about funding for the sites monitoring streamflow in the Lake Champlain basin. We are optimistic these questions will be addressed and hopefully not result in any reductions in program. Congress is now working on the fiscal 2008 budget, so the negotiations begin again and we'll wait and see the outcome of that.



At the same time we are seeing challenges in Federal funding, we have a new Governor in New York which will result in some changes in leadership in many of your agencies as well as possibly some uncertainty in program directions and funding. Again we are optimistic that the importance of the work we do together will be recognized. We look forward to the opportunity to meet with your new leaders to describe how the USGS has worked with your agencies in the past and how we will continue to work with you in addressing the water-resource issues and needs of New York State.

I mentioned in the last newsletter that we have a new Secretary of the Interior, Dirk Kempthorne. It is also now official that we have a new Director of the USGS, [Mark Myers](#). Director Myers, working with a team of USGS scientists and managers, has charted a well thought out course for the USGS in support of our cooperators and stakeholders. I have read the plan and like what I see. I hope to be able to present more on this strategy in the next newsletter – the plan is in review and has not been released yet.

As always, I am interested in hearing from you. Please feel free to contact me about these or any other issues or program opportunities you may wish to discuss. I can be reached at (518) 285-5659 or rrodrigu@usgs.gov.

USGS Annual Cooperator Symposium – June 6th at the Brookhaven National Lab

The USGS New York Water Science Center will co-sponsor the 2007 [Long Island Ground-Water Institute](#) meeting which will be held June 6, 2007 at the [Brookhaven National Lab](#). Please mark that date on your calendars and watch your email for registration information. This will be our seventh annual Cooperator Symposium providing an opportunity to interact with our scientists and to hear the results of the research done in cooperation with many of you.

Selected Projects – For information on all our active projects, visit our [project summary web page](#). For more information on the specific project, please click on the project title.

[Brine migration from the flooded Retsof salt mine in the Genesee Valley](#)

Roof collapses in the Retsof salt mine near Geneseo N.Y. in March and April of 1994 propagated upward through overlying bedrock, forming a 600-ft-long rubble zone or chimney that connected the mine to a glacial aquifer system and created sinkholes at land surface. Fresh water from the glacial aquifers flowed downward into the mine until the mine was completely flooded in January 1996. The mine opening is predicted to slowly close over the next 70 years, causing displacement of about 5 billion gallons of brine that now occupies the mine. The displaced brine will migrate upward through the rubble chimney and contaminate the lower glacial aquifer. While not presently used as a public water supply, this aquifer represents a significant source of potable water that could be utilized in the future.

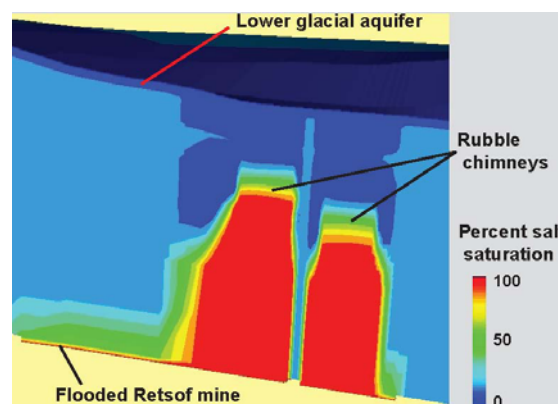


Figure 1. – Simulation results showing displaced brine moving upward through rubble chimney.

A pumping system has been designed and installed in the rubble chimney to intercept the displaced brine before it reaches the lower glacial aquifer. A three-dimensional, variable-density solute-transport model is under development to simulate the movement and pumping of salty water and brine in the collapse area above the flooded Retsof mine and within the lower glacial aquifer. Model simulations will be used to refine the placement and production rates of pumps used to intercept salty water in the rubble chimney and assess the effectiveness of the capture system. Simulation results will also be used to delineate the extent of the area potentially affected by intrusion of salty water prior to commencement of pumping, and to identify suitable locations for monitoring water quality in the lower glacial aquifer.

More information on the salt mine collapse is available in [USGS Fact Sheet 017-98](#). Contact: Richard Yager (607) 266-0217, ext. 3004, ryager@usgs.gov.

Yukon River Basin Climate Effects Assessment and Monitoring Plan

Climate change is a global phenomenon, but the magnitude of change and the significance of the effects on earth systems will vary across the globe. Arctic and subarctic regions are considered to be particularly sensitive to the effects of climate warming. Permafrost thawing, and the resulting enhancement of both water infiltration and the decomposition of large stores of frozen organic material, will radically affect both northern ecosystems of the Arctic region and the rate at which carbon is exported from those landscapes to the atmosphere, rivers, and the Arctic Ocean. In particular,



Figure 2. – Map of the Yukon River basin, in the United States and Canada.

this potential melting of the permafrost could significantly increase the rate of warming globally. These conditions make arctic and subarctic ecosystems important areas for deciphering the potential effects of global warming on natural resources.

The [US Geological Survey \(USGS\)](#) and the [US Forest Service \(USFS\)](#) have created a consortium of US and Canadian federal agencies, university scientists, and tribal organizations with the objective of implementing a monitoring and assessment strategy for tracking and responding to the rapid environmental changes occurring in northern latitudes. The collaboration will link air, water, soil, and forest information across the Yukon River Basin to track and understand regional changes in carbon flux and storage using a common frame of reference (a watershed). International collaboration with Canadian partners in the Yukon River headwaters will be critical to the success of the project. Contact: Peter S. Murdoch, USGS Program Coordinator, (518) 285-5663, pmurdoch@usgs.gov.

Hydrogeologic Mapping in Nassau County and a Geophysical / Geologic Data Management System

The major hydrogeologic units of the Garden City area of Long Island, New York, have been delineated as part of the islandwide mapping effort of Smolensky,

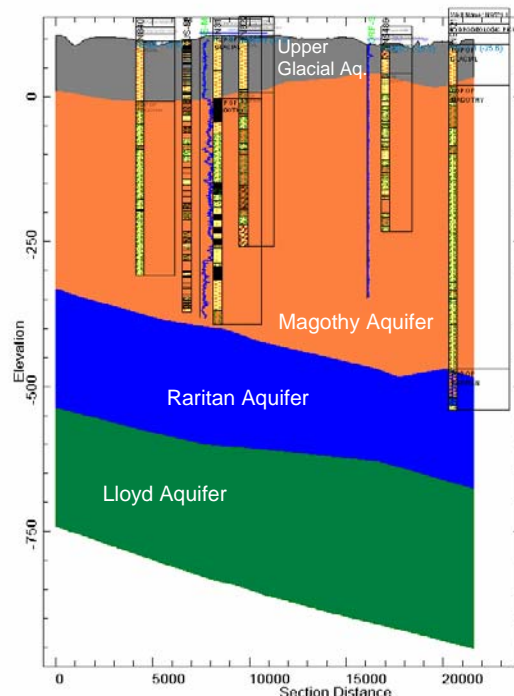


Figure 3. – Hydrogeologic cross section based on [HA-709](#) with selected geophysical and lithologic logs.

and others in 1989 ([USGS HA 709](#)). Concern about local details in the hydrogeologic framework has led the USGS, in cooperation with the [U.S. Environmental Protection Agency](#) (EPA), to assess the hydrogeology of the Garden City area so site investigations by EPA can more fully reflect local hydrogeologic conditions and fit within the regional framework.

As a part of this effort, a system to better manage and display geologic and geophysical borehole log data is being developed. The development of the borehole

database will be combined with use of GIS datasets and software packages such as Viewlog™¹ that can display new information within the context of archived data to improve our understanding of the hydrologic framework necessary for solute transport models that EPA contractors are developing (fig. 3). The hope is that this data management system will be the prototype for a system to manage the data Islandwide. Contact: Jack Monti, (631) 736-0783 ext. 127, jmonti@usgs.gov.

Hydrologic Conditions

Surface Water in New York, August 2006 to January 2007

Streamflow conditions at all hydrologic condition monitoring sites in New York over the last 6 months have been in the normal to wet range. New record high monthly mean discharges were set at selected sites in October, November, December, and January. Figure 5 shows that over a 45 day period ending in early February, the index of streamflow was still above normal. For more information, our web page displays [real time](#) and [historic](#) data; visit the [surface-water-watch](#) page for hydrologic conditions across the country; and the Center's [monthly summary](#) of hydrologic conditions in New York.

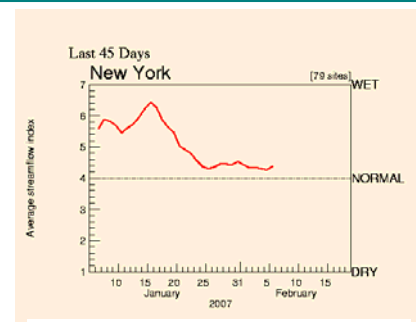


Figure 5. – Graph of index streamflow for NY, in January 2007, from 79 sites with more than 30-years of record.

Ground Water in New York, August 2006 to January 2007

Water levels in August 2006 were primarily in the normal to wet range and have remained at about that level throughout most of New York throughout the 6-month period (figure 6). Our web page displays [real time](#) and [historic](#) ground-water data for these and other wells, in addition to a [monthly summary](#) of hydrologic conditions. Another useful resource for data on hydrologic conditions in New York and the rest of the country is the USGS [ground-water watch](#) page.

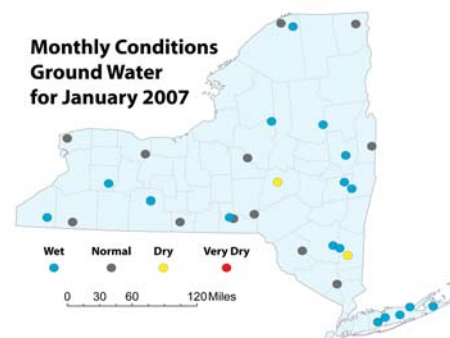
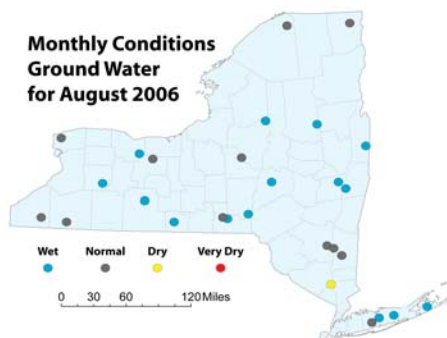


Figure 6. – Drought monitoring wells with greater than 10 years of record, showing the percent exceedance for August 2006 and January 2007. Note many additional network wells exist with less than 10 years of record. Only a small subset of the wells on Long Island is included because of long-term impacts from sewerage and water supply pumping that obscures the natural climatic effects.

Annual Water Data Report now on-line

The USGS has moved towards a paperless Water Data Report which is now available at <http://ny.water.usgs.gov/pubs/wdr/wdrny051/>. Please bear with us as we work to get some of the bugs out of the process and add some new ways to query and retrieve data. Ultimately this change will result in a more timely and accessible product. We have also added the capability to [search for sites](#) including using a [mapping tool](#). When using this tool, we recommend you zoom in to the area of interest and then select “List Sites Shown” and then download the data for those sites on the list you are interested in. In future revisions there will be additional ways to query, select, and download groups of sites.



New Reports from the New York Water Science Center

–Listed below are some of the reports and abstracts written by scientists in the USGS New York WSC that were released in recent months. A complete list of New York WSC publications can be found on our [publication search page](#).

- Abbene, I.J., 2006, [Identifying sources of perchlorate in ground water, Suffolk County, New York – Project plans and some preliminary research](#): in Association of Long Island Geologists, Thirteenth Conference on Geology of Long Island and Metropolitan New York, State University of New York at Stony Brook, April 22, 2006, poster session, 1p.
- Coon, W.F. and Sheets, R.A., 2006, [Estimate of ground water in storage in the Great Lakes Basin, United States, 2006](#): U.S. Geological Survey Scientific Investigations Report 2006-5180, 19p.
- Gilliom, R.J. and others, 2006, [Pesticides in the Nation's streams and ground water, 1992-2001](#): U.S. Geological Survey Circular 1291, 172p.
- Gilliom, R.J. and Hamilton, P.A., 2006, [Pesticides in the Nation's streams and ground water, 1992-2001 – a summary](#): U.S. Geological Survey Fact Sheet 2006-3028, 6p.

The [USGS Water Resources Discipline](#) (WRD) has the principal responsibility within the Federal Government to provide the hydrologic information and interpretation needed by others to achieve the best use and management of the Nation's water resources. WRD actively promotes the use of its information products by decision makers to:

- Minimize loss of life and property as a result of water-related natural hazards, such as floods, droughts, and land movement.
- Effectively manage ground-water and surface-water resources for domestic, agricultural, commercial, industrial, recreational, and ecological uses.
- Protect and enhance water resources for human health, aquatic health, and environmental quality.
- Contribute to wise physical and economic development of the Nation's resources for the benefit of present and future generations.

If you have an environmental or resource-management issue in which you would like to partner with the USGS to investigate, please contact any of our senior management staff (listed below). Projects are supported primarily through the [Cooperative Water Program](#). This is a program through which any State, County, or local agency may work with the USGS to fund and conduct a monitoring or investigation project.

- Lincoln, T.A., Horan-Ross, D.A., McHale, M.R., and Lawrence, G.B., 2006, [Quality assurance data for the routine water analyses by the U.S. Geological Survey laboratory in Troy, New York – July 1997 through June 1999](#): U.S. Geological Survey Open-File Report 2006-1245, 25p., online only.
- Lincoln, T.A., Horan-Ross, D.A., McHale, M.R., and Lawrence, G.B., 2006, [Quality assurance data for the routine water analyses by the U.S. Geological Survey laboratory in Troy, New York – July 1999 through June 2001](#): U.S. Geological Survey Open-File Report 2006-1245, 27p., online only.
- Murdoch, P.S., McHale, M.R., Mast, M.A., and Clow, D.W., 2006, [The U.S. Geological Survey Hydrologic Benchmark Network](#): U.S. Geological Survey Fact Sheet 2005-3135, 6p.
- Murdoch, P.S. and Shanley, J.B., 2006, [Detection of water quality trends at high, median, and low flow in a Catskill mountain stream, New York, through a new statistical method](#): Water Resources Research, v. 42, W08407, doi:10.1029/2004WR003892, 12 p.

- Stumm, Frederick, 2006, [Hydrogeology and extent of saltwater intrusion of the Lloyd Aquifer in Northern Nassau County, New York](#): in Association of Long Island Geologists, Thirteenth Conference on Geology of Long Island and Metropolitan New York, State University of New York at Stony Brook, April 22, 2006, 11p.
- Stumm, Frederick and Chu, Anthony, 2006, [Application of advanced surface and borehole geophysical methods to environmental and engineering problems on Long Island and Manhattan](#): in Association of Long Island Geologists, Thirteenth Conference on Geology of Long Island and Metropolitan New York, State University of New York at Stony Brook, April 22, 2006, poster session, 1p.
- Suro, T.P. and Firda, G.D., 2006, [Flood of April 2-3, 2005, Neversink River Basin, New York](#): U.S. Geological Survey Open-File Report 2006-1319, 98p.
- U.S. Geological Survey, 2006, [Water resources data, New York, water year 2005, Volume 1, Eastern New York excluding Long Island](#): U.S. Geological Survey Water Data Report NY-05-1, 996p.
- Wall, G.R., Nystrom, E.A., and Litten, S., 2006, [Use of an ADCP to compute suspended-sediment discharge in the tidal Hudson River, New York](#): U.S. Geological Survey Scientific Investigations Report 2006-5055, 16p.

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